

From: christopher.amandes@morganlewis.com
Sent: Friday, October 06, 2017 3:32 PM
To: Murdock, James; Bernier, Roberto; Stucky, Marie; Thompson, Steve; Sullivan, Greg; Miles, James; Haas, Craig
Cc: Quiroz Guadalupe_TCEQ; Jason.Holloman@tceq.texas.gov; derek.mangold@tceq.texas.gov; Craig.Hill@pcs.hctx.net
Subject: Third Response to EPA Sept. 7 Information Request - Arkema Crosby Facility

You have received 1 secure file from christopher.amandes@morganlewis.com.

Use the secure link below to download.

This email will provide you access to documents that are being produced in Arkema Inc.'s third response to the Information Request that EPA sent to Arkema on September 7. Although I have left the CBI banner on the transmittal letter because this has been a sequential production, the documents in this third response are not Arkema Confidential Business Information and there will no other documents produced with this third response that are CBI.

Consistent with Arkema's agreement with Harris County Pollution Control Services Department and TCEQ, this email is also being sent to representatives of those agencies so they will have the same access to the documents being produced to EPA.

You will receive additional emails like this one as Arkema produces additional documents in response to the Information Request. Please let me know if you have any questions or have difficulty accessing the documents.

Chris

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From: christopher.amandes@morganlewis.com
Sent: Tuesday, October 10, 2017 5:25 PM
To: Craig.Hill@pcs.hctx.net
Cc: Murdock, James; Bernier, Roberto; Stucky, Marie; Thompson, Steve; Sullivan, Greg; Miles, James; Haas, Craig; Quiroz Guadalupe_TCEQ; Jason.Holloman@tceq.texas.gov; derek.mangold@tceq.texas.gov
Subject: Response to questions in September 26 email

You have received 1 secure file from christopher.amandes@morganlewis.com.

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Mr. Hill,

This email will provide you access to documents that are being produced by Arkema Inc. in response to the questions you asked in a September 26 email to JeanMarie Cencetti of Arkema. None of this information is Arkema Confidential Business Information.

Consistent with Arkema's agreement with EPA, Harris County Pollution Control Services Department, and TCEQ, this email is also being sent to representatives of those agencies so they will have the same access to the documents being produced to you.

Please let me know if you have any questions or have difficulty accessing the documents.

Chris

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Stucky, Marie

From: Stucky, Marie
Sent: Tuesday, October 10, 2017 8:16 AM
To: Thompson, Steve; Bates, Samuel; Murdock, James
Subject: RE: Arkema

Here is a very brief write-up of the timeline as of today:

9/7/17 – Sent Arkema Crosby an Information Request (114)

9/14/17 – Arkema Crosby requested a 90 Day Extension

9/18/17 – EPA Attorney sent email to Arkema Crosby Attorney explaining the extension of the deadline for 30 days was granted for some questions and denied for other questions.

9/18/17 – Received first batch of documents from Arkema Crosby responding to the 114.

9/22/17 – Received second batch of documents from Arkema Crosby responding to the 114.

9/29/17 – EPA reviewed documents provided by Arkema Crosby and reiterated the timeline on questions to be answered, requested clarification and additional information on some questions, and granted a 30 day extension for the remaining questions.

10/6/17 – EPA received additional document responding to the 114

Please make edits and changes as appropriate. Let me know if you would like this in a different format or if you need additional details on any of the above components.

Sincerely,
Marie Stucky
U.S. Environmental Protection Agency Region 6
1445 Ross Avenue (6EN-AS)
Dallas, Texas 75202
(214)665-7560
stucky.marie@epa.gov

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From: Thompson, Steve
Sent: Tuesday, October 10, 2017 7:24 AM
To: Bates, Samuel <Bates.Samuel@epa.gov>; Stucky, Marie <Stucky.Marie@epa.gov>; Murdock, James <Murdock.James@epa.gov>
Subject: Fwd: Arkema

Can I please get a brief write up on status? Thanks

Sent from my iPhone

Begin forwarded message:

From: "Gray, David" <gray.david@epa.gov>
Date: October 10, 2017 at 7:20:21 AM CDT
To: "Seager, Cheryl" <Seager.Cheryl@epa.gov>, "Gilrein, Stephen" <gilrein.stephen@epa.gov>, "Thompson, Steve" <thompson.steve@epa.gov>
Subject: Arkema

All –

I need the latest update on the Arkema facility enforcement activities including the RMP inspection in last week's weekly report and the status of the 114 letter response/extension for an update before Sam's meeting with members of Congress regarding the Hurricane.

David

Stucky, Marie

From: Stucky, Marie
Sent: Tuesday, October 10, 2017 8:30 AM
To: Murdock, James; Thompson, Steve; Tate, Samuel
Subject: RE: Arkema

1. Response was mailed out to the facility 9/29 via certified mail.
2. Yes, agreed. We reviewed the information provided by Arkema Crosby prior to sending formal response on 9/29.

Sincerely,
Marie Stucky
U.S. Environmental Protection Agency Region 6
1445 Ross Avenue (6EN-AS)
Dallas, Texas 75202
(214)665-7560
stucky.marie@epa.gov

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From: Murdock, James
Sent: Tuesday, October 10, 2017 8:23 AM
To: Stucky, Marie <Stucky.Marie@epa.gov>; Thompson, Steve <thompson.steve@epa.gov>; Tate, Samuel <Tate.Samuel@epa.gov>
Subject: RE: Arkema

This is also what I have written up but you were the quicker. Two points/questions:

1. Did we actually send the response on the 29th or did it go out on October 2nd?
2. I think we should specify that we sent the formal response after reviewing the information they already provided.

From: Stucky, Marie
Sent: Tuesday, October 10, 2017 8:16 AM
To: Thompson, Steve <thompson.steve@epa.gov>; Tate, Samuel <Tate.Samuel@epa.gov>; Murdock, James <Murdock.James@epa.gov>
Subject: RE: Arkema

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Subject: Fwd: Arkema

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Date: October 10, 2017 at 7:20:21 AM CDT
To: "Seager, Cheryl" <Seager.Cheryl@epa.gov>, "Gilrein, Stephen" <gilrein.stephen@epa.gov>, "Thompson, Steve" <thompson.steve@epa.gov>
Subject: Arkema

All –

I need the latest update on the Arkema facility enforcement activities including the RMP inspection in last week's weekly report and the status of the 114 letter response/extension for an update before Sam's meeting with members of Congress regarding the Hurricane.

David

From: christopher.amandes@morganlewis.com
Sent: Wednesday, October 11, 2017 5:27 PM
To: Craig.Hill@pcs.hctx.net
Cc: Murdock, James; Bernier, Roberto; Stucky, Marie; Thompson, Steve; Sullivan, Greg; Miles, James; Haas, Craig; Quiroz Guadalupe_TCEQ; Jason.Holloman@tceq.texas.gov; derek.mangold@tceq.texas.gov
Subject: Arkema Crosby facility - Reformatted attachments for response to questions in September 26 email

You have received 1 secure file from christopher.amandes@morganlewis.com.

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Mr. Hill,

This email will provide access to revised emission calculation spreadsheets in a readable format, as well as a single document that includes the final STEERS reports for each of the 5 emissions events and the amounts of individually speciated compounds for each event. These are being submitted to you as part of the above-referenced response to Harris County Pollution Control Services Department that I sent you yesterday afternoon.

Please let me know if you have any questions or have trouble accessing the referenced documents.

Chris

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Stucky, Marie

From: Amandes, Christopher B. <christopher.amandes@morganlewis.com>
Sent: Wednesday, October 11, 2017 8:46 AM
To: Craig.Hill@pcs.hctx.net
Cc: Murdock, James; Bernier, Roberto; Stucky, Marie; Thompson, Steve; Sullivan, Greg; Miles, James; Haas, Craig; Quiroz Guadalupe_TCEQ; Jason.Holloman@tceq.texas.gov; derek.mangold@tceq.texas.gov
Subject: Arkema Crosby - Response to questions in September 26 email

All:

The emission calculation spreadsheets that were part of the above-referenced response to Harris County Pollution Control Services Department yesterday afternoon were corrupted in the course of being converted to pdf format. We will send a revised set of these spreadsheets in a readable format later today or tomorrow.

I apologize for any inconvenience. Please let me know if you have any questions.

Chris

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From: christopher.amandes@morganlewis.com
Sent: Friday, October 13, 2017 5:07 PM
To: Jason.Holloman@tceq.texas.gov
Cc: Murdock, James; Bernier, Roberto; Stucky, Marie; Thompson, Steve; Sullivan, Greg; Miles, James; Haas, Craig; Quiroz Guadalupe_TCEQ; derek.mangold@tceq.texas.gov; Craig.Hill@pcs.htx.net
Subject: Response to emailed questions of October 4 and 6 - Arkema Crosby Facility (CONFIDENTIAL BUSINESS INFORMATION)

You have received 1 secure file from christopher.amandes@morganlewis.com.

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Mr. Holloman,

This email will provide you access to Arkema Inc.'s response to your emailed questions to Carolyn Hervey on October 4 and the additional questions in your October 6 email following your inspection of the Crosby plant on October 5. The documents being transmitted in this response are Arkema Confidential Business Information, and I am also sending you a separate email with the documents that are not Arkema CBI.

Consistent with Arkema's agreement with EPA and Harris County, this email is also being sent to representatives of those agencies so they will have the same access to the documents being produced to TCEQ.

Please let me know if you have any questions or have difficulty accessing the documents.

Chris

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From: christopher.amandes@morganlewis.com
Sent: Friday, October 13, 2017 5:20 PM
To: Jason.Holloman@tceq.texas.gov
Cc: Murdock, James; Bernier, Roberto; Stucky, Marie; Thompson, Steve; Sullivan, Greg; Miles, James; Haas, Craig; Quiroz Guadalupe_TCEQ; derek.mangold@tceq.texas.gov; Craig.Hill@pcs.hctx.net
Subject: Response to emailed questions of October 4 and 6 - Arkema Crosby Facility

You have received 1 secure file from christopher.amandes@morganlewis.com.
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Mr. Holloman,

This email will provide you access to Arkema Inc.'s response to your emailed questions to Carolyn Hervey on October 4 and the additional questions in your October 6 email following your inspection of the Crosby plant on October 5. The documents being transmitted in this response are NOT Arkema Confidential Business Information, and I have also sent you a separate email with the documents that are Arkema CBI.

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Please let me know if you have any questions or have difficulty accessing the documents.

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Stucky, Marie

From: Amandes, Christopher B. <christopher.amandes@morganlewis.com>
Sent: Wednesday, October 18, 2017 6:24 PM
To: Murdock, James
Cc: Bernier, Roberto; Stucky, Marie; Thompson, Steve; Sullivan, Greg; Miles, James; Haas, Craig; Quiroz Guadalupe_TCEQ; Jason.Holloman@tceq.texas.gov; derek.mangold@tceq.texas.gov; Craig.Hill@pcs.hctx.net
Subject: Arkema Crosby Facility - Fourth Response to EPA Sept. 7 Information Request
Attachments: Transmittal letter.pdf; Fourth Response to Sept. 7 Information Request.pdf

Mr. Murdock,

Attached is the fourth response to the September 7 Information Request submitted to Arkema Inc. regarding the Arkema Crosby facility. Because this is a short response, I am sending this directly instead of via the external sharefile site we have used previously. This response does not contain any Arkema confidential business information.

This response addresses the requests for clarification of and elaboration on a number of items that Cheryl Seager posed in her September 29, 2017 letter to JeanMarie Cencetti of Arkema. With this submission, Arkema believes that it has now responded completely to all of the questions in the September 7 Information Request.

Please let me know if you have any questions.

Chris

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Direct: +1.713.890.5735 | Mobile: +1.832.646.3702 | Fax: +1.713.890.5001

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**Arkema's Fourth Response to EPA Information Request
Pursuant to the Clean Air Act Section 114(a), for the Arkema
Crosby Plant, received Sept. 7, 2017**

QUESTION 1

The following composite information-timeline is Arkema's best effort to provide the EPA with as complete an answer as possible. This composite information/timeline is built upon the recollections of ride-out crew members, ride-out logs taken contemporaneously (previously provided to the EPA), and interviews with a number of people. Despite our extensive investigatory efforts to date, further details may emerge providing new and/or differing accounts than those recounted below. Arkema reserves the right to promptly supplement and/or amend the composite information-timeline below as new and/or differing details come to light.

b. Please provide information detailing: the individual equipment used to provide backup power, which pieces of equipment provided power to which buildings, when each source of backup power was used, and how and when each source of backup power failed

RESPONSE:

Diesel generators provide backup power to the storage buildings at the Crosby Facility. The list of buildings controlled by generators is as follows:

- Generator 21-GN1
 - Supplies backup power to buildings 8, 9, 13, 27, and bays 1-3 in Building 21;
- Generator 4-GN2
 - Supplies backup power to buildings 2, 3, 40, 26, the water tower, fire water tank, and diesel fuel pumps;
- Generator 43-GN1
 - Supplies backup power to bays 4-5 in building 21, the thermal oxidizer, and the scrubber;
- Generator 4-GN1
 - Supplies backup power to building 4, the nitrogen generator, and the main air compressor;
- Generator 32-GN1
 - Supplies backup power for the MPU;
- Generator 14-GN1
 - Supplies backup power for the wastewater treatment plant;

The cold storage buildings at the Crosby Facility are listed as follows: Building 2, Building 3, Building 8, Building 9, Building 13, Building 27, and Building 40.

Due to the unprecedented rain and floodwaters at the Crosby facility, the plant's ride-out crew proactively cut power to several buildings prior to the loss of main power and backup power sources. This decision was made due to the floodwater levels rising high enough to potentially reach the main power transformers for the buildings, posing a risk of electrocution to the ride-out crew. The order of those buildings being shut down prior to loss of main power is as follows:

- Building 3's power was cut locally on Sunday morning, August 27;
- Building 8 and Building 9 had their power cut about an hour after Building 3;

- Building 4 and Building 10 had their power cut next;
- Building 13 and Building 2 were both cut after that;
- Building 5 was shut down almost immediately following Building 2 and Building 13;
- Building 40 was shut down several hours after Building 5 which was late on Sunday evening, August 27; and
- Around 11:00 PM on Sunday August 27, power was cut to motor control center 39, which supplied power to the wastewater treatment plant.

Because the transformers to these buildings were proactively cut, their generators never started. At approximately 1:30-2:00 AM on the morning of Monday, August 28, 2017, the main CenterPoint power transformer blew due to rising floodwaters. After the loss of main power, Generators 21-GN1 and 43-GN1 started automatically, and were supplying power to Building 21 and Building 27. Generator 32-GN1, which feeds the MPU, began arcing as it was trying to power on and was proactively shut off. As water continued rising on early Monday morning, it began jeopardizing Generators 21-GN1 and 43-GN1. They were shut down at approximately 5:00 AM Monday, August 28 to prevent an unsafe electrical hazard.

c. Please provide information detailing the best known time and duration for any liquid nitrogen activities

RESPONSE:

The liquid nitrogen system (N2) was never utilized during the event due to the rising floodwaters making the N2 system unavailable and impossible to use. On Sunday, August 27, Dennis Avant, a production supervisor, placed an elbow joint and extension pipe—estimated to be 8-10 inches long—on the N2 system headers in an effort to keep them above the rising floodwaters and preserve the N2 system as a last-resort back-up. By daylight on Monday morning, August 28, the extension pipe was underwater. No other N2 system activities occurred during the event and the N2 system was never activated.

d. Please provide information detailing the times and dates Arkema loaded material onto each trailer, information regarding what specific material was placed in specific trailers, and how Arkema transported the material to the trailers from the buildings.

RESPONSE:

The ride-out crew began loading products from cold storage buildings to other cold storage buildings and refrigerated trailers sometime before 7:30 a.m. on Sunday, August 27, 2017. The first product moved was the LUPEROX 546 stored in Building 3. Around 7:30 a.m., the LUPEROX 221 stored in Building 9 was moved. By roughly 7:00 PM on Sunday, August 27, the ride-out crew had emptied all of the products stored in Buildings 2, 3, 8, 9, 13, and 40 into refrigerated trailers or into Building 27, which still had power and cooling. All of the products were moved on Sunday, August 27 by yard mules and forklifts.

On Monday morning, around roughly 2:00 AM, the ride-out crew made the decision to move the product out of Building 27 and into the remaining refrigerated trailers because the primary power had been lost due to extensive flooding, and Building 27 was operating on generator power. However, due to rising floodwaters approaching the backup generators, the ride-out crew decided that, Building 27 would have to be shut down and the product inside Building 27 would have to be moved into refrigerated trailers. Around 3:00-5:00 AM on Monday, August 28, the ride-out crew

began moving product from Building 27 into the two refrigerated trailers parked in front of Building 27. The first product moved out of Building 27 was LUPEROX 221. By approximately 8am, the ride-out crew had filled the two trailers in front of Building 27. However, they still had roughly 48 pallets, each weighing 1,575 pounds, of product left in Building 27.¹ By this time, the floodwaters had risen to where it had flooded the yard mules and forklifts they had previously used to move the pallets. Thus, the only option remaining was to breakdown the packaging on each pallet, and begin hand-stacking/loading the product into the trailers. In order to do this, the ride-out crew took the pallets one-by-one from Building 27, using the large forklift (also referred to as the Lull), to Building 21 where they could then break them down and load the product individually by hand into the trailer at Building 21. This process lasted all day and ended roughly between the hours of 10:00 pm to midnight on Monday, August 28.

Other than the information outlined above, Arkema is still determining specifically what products were loaded into which trailers. The information on all of the cold storage products that were in the various trailers can be found in the Safety Data Sheets previously provided.

e. It is unclear from Arkema's response if the refrigerated trailers were moved throughout the event. Please provide a specific response.

RESPONSE:

Several trailers were moved during the event. Arkema's current understanding is that trailers were moved as follows:

- After loading trailers with all of the cold storage material from Building 2 on Sunday morning, August 27, the ride-out crew moved the trailers to the landing yard just North West of the MPU unit;
- By 7 p.m. Sunday, August 27, the trailers from Building 40 were moved to the landing yard after having been loaded with product; and
- By Monday morning, August 28, a total of five (5) trailers had been moved to the landing yard. During the early afternoon on Monday, another trailer by Building 21 was moved over to the landing yard and was the last trailer able to be moved due to the floodwaters.

The last trailer moved to the landing yard coincided with all of the yard mules having been flooded, making it impossible to move any more trailers from their locations.

g. Please provide a detailed timeline and analysis of why the refrigeration systems in each alternative storage trailer failed.

RESPONSE:

It is currently unknown exactly why the refrigeration systems in the refrigerated trailers failed. Forensic analyses of these trailers will need to be conducted to establish the cause of such failures. The temperature data provided in response to subpart (f) of this question establishes the best known timeline of when specific trailer refrigeration systems failed. Failure information or timelines for the trailers that did not have temperature data are currently unknown.

¹ Each pallet held 45 individual containers of product, each weighing 35 pounds. All 2,160 of these 35 pound containers were hand stacked into the remaining trailer in front of Building 21.

Eyewitness accounts from the ride-out crew stated that one of the two trailers by Building 27 failed around 6:00-7:00 PM on Monday, August 28, 2017. Attempts to restart that trailer were unsuccessful. By roughly 10:00 PM or midnight on Monday, the other trailer by Building 27 had also failed. Attempts to restart that trailer were likewise unsuccessful.

h. Initial ignition and combustion of materials in each of the nine trailers

i. Controlled burn of each trailer

Please provide a detailed accounting of where, when, and why each individual trailer burned

RESPONSE:

Most of this information can be found in the timeline previously provided to EPA.

There were three (3) separate burn events for trailers at the Crosby plant: (1) one trailer next to Building 21 ignited and burned beginning at approximately 2:00 - 2:30 AM CDT on Thursday, August 31, 2017; (2) two trailers next to Building 27 ignited and burned beginning at approximately 5:00 PM CDT on Friday, September 1, 2017; and (3) six trailers located at the North-East part of the Crosby plant and slightly North-West of the MPU unit were ignited remotely by the Unified Command and burned at approximately 3:45 PM CDT on Sunday, September 3, 2017.

Regarding the request as to why the individual trailers burned, Arkema's current understanding is as follows:

- The first three trailers (one at Building 21 and two at Building 27) burned as a result of some or all of the organic peroxide materials warming past their decomposition temperature and self-igniting; and
- The last six trailers burned as a result of the Unified Command entering the facility and placing ignition charges on each of the six separate trailers. Following this, the Unified Command remotely ignited the remaining trailers in the following order (trailers identified in order location West to East)—3, 4, 1, 2, 5, 6.

QUESTION 2

Please provide the management of change or procedures for emergency transfer of organic peroxide materials for storage on refrigerated trailers.

RESPONSE:

These procedures are addressed in Arkema's 'Storage Building Limits and Safety Guidelines' operating procedure that was produced to EPA on September 22. No management of change evaluation was necessary during the incident because the emergency use of refrigerated trailers for storage of organic peroxides was already included in the operating procedure.

Morgan Lewis

Christopher B. Amandes

Partner

+1.713.890.5735

christopher.amandes@morganlewis.com

October 18, 2017

By email murdock.james@epa.gov and US mail

Ms. Cheryl T. Seager, Director
Compliance Assurance and Enforcement Division
United States Environmental Protection Agency Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

RE: Arkema Inc. Crosby, Texas Facility
Fourth Response to EPA Information Request Pursuant to the Clean Air Act
Section 114

Dear Ms. Seager:



On behalf of the Arkema Inc. Crosby, Texas facility (Arkema), we are hereby submitting this fourth response to the United States Environmental Protection Agency (EPA) request to provide information pursuant to the Clean Air Act Section 114(a) (Information Request) that was received on September 7, 2017. Specifically, Arkema is responding to your request for clarification of and elaboration on a number of items in your letter to JeanMarie Cencetti of Arkema dated September 29, 2017. Arkema believes that with this response, it has now responded completely to all of the questions in the September 7 Information Request.

Arkema has responded in good faith to provide the information currently available to it, and it has made diligent efforts to ensure that this information is accurate. Arkema's investigation of the incident is ongoing, as are investigations by the Chemical Safety Board and others, and Arkema acknowledges its obligation to submit new or corrected information as it becomes available.

This response is submitted subject to all of the objections and qualifications set out in our initial response transmittal letter of September 18.

Morgan, Lewis & Bockius LLP

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Ms. Cheryl T. Seager
United States Environmental Protection Agency Region 6
October 18, 2017
Page 2

If you have any questions concerning this response, please contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris Amandes", with a long, sweeping horizontal line extending to the right.

Christopher B. Amandes
Counsel to Arkema

cc: all with attachments

Mr. Roberto Bernier, EPA Region 6
United States Environmental Protection Agency Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Mr. Ramiro Garcia, Jr., Deputy Director
Office of Compliance and Enforcement – MC-172
Texas Commission on Environmental Quality
P. O. Box 13087
Austin, Texas 78711-3087

Ms. Guadalupe Quiroz
TCEQ Region 12
5425 Polk Avenue, Suite H
Houston, Texas 77023

Mr. Craig Hill
Harris County Pollution Control Services Department
101 South Richey, Suite H
Pasadena, Texas 77506

From: Amandes, Christopher B. <christopher.amandes@morganlewis.com>
Sent: Thursday, October 19, 2017 1:42 PM
To: Murdock, James
Cc: Bernier, Roberto; Stucky, Marie; Thompson, Steve; Sullivan, Greg; Miles, James; Haas, Craig; Quiroz Guadalupe_TCEQ; Jason.Holloman@tceq.texas.gov; derek.mangold@tceq.texas.gov; Craig.Hill@pcs.hctx.net
Subject: Corrected Third Response to EPA September 7 Information Request
Attachments: ARK_EPA_0000797.pdf

Because of a production error, the third page of Arkema's third response to EPA's information request was inadvertently omitted when that document was produced on October 6. Attached is a complete third response.

Please let me know if you have any questions.

Chris

Christopher B. Amandes

Morgan, Lewis & Bockius LLP

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